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FARM PRICES OF COTTON RELATED TO QUALITY
OKLAHOMA CROP - SEASON 1928-29

A Preliminary Report

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April, 1931

This report presents certain of the results thus far obtained in the study described by the authors. It is issued at this time to make the information available for immediate use in advance of a more comprehensive printed publication when the study is completed.

Bureau of Agricultural Economics,
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Acknowledgments

Credit is due Dr. B. Youngblood for his contributions to the study in its beginning; Arthur W. Palmer for general supervision and helpful suggestions; Maurice R. Cooper and Joel F. Hembree for contributions in formulating methods for tabulating the data; John S. Burgess Jr. and T. A. Neubauer for assistance in compiling the data; ginners, warehousemen, and cotton buyers for making data available; the Oklahoma State Agricultural Experiment Station for cooperation in the collection and tabulation of the data; the Grade and Staple Estimates Project of the Division of Cotton Marketing for cooperation in the collection and tabulation of the data and for the classification of the samples; and the Publications Committee of the Division of Cotton Marketing for constructive criticisms and helpful suggestions.

FARM PRICES OF COTTON RELATED TO QUALITY
OKLAHOMA CROP, SEASON, 1928-29 1/

By L. D. Howell, Senior Agricultural Economist.
Division of Cotton Marketing 2/

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INTRODUCTION

Large quantities of cotton with a staple length shorter than 7/8 of an inch are produced annually in Oklahoma. A considerable quantity of the crop is of very low grade largely because of unfavorable weather conditions and methods of harvesting. The proportion of the crop that was less than 7/8-inch in staple length and, therefore, untenderable on futures contracts 3/ amounted to 147,400 bales, or 12.4 per cent in 1928; and to 321,300 bales, or 28.6 per cent in 1929. 4/ The proportion of the crop which was untenderable on futures contracts because of low grade amounted to 169,000 bales, or 14.2 per cent in 1928; and to 144,500 bales, or 12.8 per cent in 1929. The proportion of the cotton produced in the United States that was untenderable on futures contracts because of short staple

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1/ These data were collected in cooperation with the Oklahoma Agricultural Experiment Station.

2/ The substance of this paper was given at the Cotton School of the College of Agriculture and Oklahoma Cotton Growers' Association at Oklahoma City, August 2, 1930.

3/ Section 5 of the United States Cotton Futures Act and regulations of the Secretary of Agriculture thereunder.

4/ Cotton Grade and Staple Estimate Report, Bureau of Agricultural Economics, United States Department of Agriculture.

Table 1. -Tenderability 1/ of cotton ginned in Oklahoma and in the United States, crops of 1928 and 1929 2/

Item	Oklahoma			
	1928		1929	
	Bales	Per cent	Bales	Per cent
Total Crop	1,167,000	100.0	1,125,300	100.0
Tenderable	915,500	77.1	708,800	63.0
Untenderable 3/	271,500	22.9	416,500	37.0
Because of Grade	169,000	14.2	144,500	12.8
Because of Staple	147,400	12.4	321,300	28.6

Item	United States			
	1928		1929	
	Bales	Per cent	Bales	Per cent
Total Crop	14,268,200	100.0	14,515,800	100.0
Tenderable	11,724,200	82.2	10,994,800	75.7
Untenderable 3/	2,544,000	17.8	3,521,000	24.3
Because of Grade	756,800	5.3	880,100	6.1
Because of Staple	2,051,100	14.4	2,920,200	20.1

1/ According to Section 5 of the United States Cotton Futures Act and the regulations of the Secretary of Agriculture thereunder.

2/ Tenderability as reported by the Bureau of Agricultural Economics, Division of Cotton Marketing on April 18, 1930.

3/ Some cotton was untenderable because of both grade and staple and this fact accounts for total untenderable being less than the sum of untenderable because of grade and because of staple.

amounted to 2,051,100 bales, or 14.4 per cent, in 1928 and to 2,920,200 bales, or 20.1 per cent, in 1929; and because of low grade amounted to 756,800 bales, or 5.3 per cent in 1928 and to 880,100 bales, or 6.1 per cent, in 1929. (Table 1.)

The proportion of the Oklahoma cotton crop that had a staple length of 7/8-inch and shorter amounted to 572,490 bales, or 48.2 per cent, in 1928 and to 821,300 bales, or 73.0 per cent, in 1929. Comparable figures for the United States show that the proportion of the crop that had a staple length of 7/8-inch and shorter amounted to 7,994,269 bales, or 56 per cent in 1928 and to 8,454,200 bales, or 58.2 per cent in 1929. This short staple cotton competes directly with cotton grown in India, China, and some other foreign countries, where, it is claimed, the cost of production is less than in the United States. This competition, together with the large quantity of very short staple cotton produced in Oklahoma, is causing public attention to be directed to the desirability of improving the quality of the cotton produced in this State.

Farmers are inclined to grow the kind of cotton which, at prices received in local markets, yields them as individuals the greatest net returns. Where an averaged price is received for all qualities of cotton, farmers are more interested in high yields than in good quality and they find it more profitable as individuals to grow the kind of cotton that can be produced at the least cost per pound regardless of grade and staple length. On the other hand, where prices received by growers are appreciably higher for the longer than for the shorter staples, farmers are offered an inducement for producing the longer staple cotton. It is reasonable to suppose that farmers will produce cotton of better quality when, and not until, the differences in prices received are adequate to convince them that the production of the better qualities is as profitable as, or more profitable than, the production of cotton of poorer quality.

The supply of the different qualities of cotton produced by growers who follow their individual economic interests is likely to be out of line with spinners' demand, if prices received by growers fail to reflect accurately the spinning quality of the different grades and staple lengths. It is practically impossible, under a system of individual economy, to adjust accurately the quality of cotton produced to spinners' demand unless prices received by growers reflect accurately the differences in demand for the different grades and staple lengths. Farmers are interested in adjusting the quality of cotton grown to spinners' demand when such adjustment results in larger profits to the individual growers.

OBJECTS OF STUDY

The objects of this study are, (1) to determine the extent to which prices received by growers in the same markets on the same days varied with the grade and staple length of the cotton; (2) to compare these variations in prices with the differences for grade and the premiums and discounts for staple length paid in central markets on the same days; (3) to determine to what extent the average prices received by growers in different local markets varied with the average grade and staple length of the cotton in those markets; and (4) to determine the relationship between the fluctuations in prices received by growers in local markets and those paid in central and futures markets. It is the further purpose of this study to call attention to some of the factors responsible for or associated with these variations; to indicate some of the influences of the variations in prices received by growers for different grades and staple lengths on the quality of cotton grown; and to suggest means of bringing about a better adjustment of the quality of cotton produced to consumer demand.

Brief discussions of the characteristics and functions of local cotton markets and of the meaning and measures of quality in cotton are given as a back-ground for the analysis presented.

LOCAL MARKETS

Cotton is sold by farmers in almost every village, town, and city in the cotton-producing area of Oklahoma. The volume of sales varies from a few hundred bales at cross-roads stores and country gins to many thousand bales in larger cities. The greater part of the crop, however, is sold in smaller cities and towns.

These local markets supply a meeting place for growers and buyers and give farmers an opportunity to bargain individually in the sale of their cotton; furnish a ready and convenient market where farmers may sell their cotton at almost any time; serve as a point for assembling cotton in such quantities as to facilitate handling; and serve as a medium through which the demand for cotton is transmitted to growers.

The personnel of the local market consists of cotton growers and local buyers. Farmers, as a rule, know little about the classification of cotton. Their bargaining power is largely determined by their business judgment and their financial obligations to local buyers. The number of local buyers varies from one in some markets to several in others. Among them are supply merchants, gin operators, and others who take cotton on debts of farmers or for increasing their volume of business; local cotton merchants who are interested only in buying and selling cotton; and representatives of large cotton firms or mills who buy for their firms on joint account, on salary, or on commission.

The facilities available and the methods of handling cotton in local markets vary considerably. Some have a public square, a cotton yard, or a railroad platform where buyers and farmers meet and the cotton is sold through open competitive bids. In other markets farmers deliver their cotton directly from the gin to a warehouse where the bales are weighed and sampled and receipts are issued in the farmer's name. With the samples and receipts obtained at the warehouse the farmers bargain with local buyers for the sale of their cotton.

In most of the local markets the local buyers obtain information on futures prices every fifteen minutes and on spot prices at the close of the market through the Commercial News Department of telegraph companies. This information is used in determining the maximum prices local buyers can afford to pay growers for cotton. Many local buyers receive limits from cotton merchants in central markets as a basis for buying. These limits generally tend to vary with the average quality of the cotton recently received from the local markets.

QUALITY OF COTTON 5/

Quality of cotton is indicated by grade, staple length, and character. Grade is determined by color and luster of the cotton; nature and quantity of foreign matter present such as leaf, shale, motes, sand and dust; and conditions as a result of ginning as indicated by smoothness of fibers, nappiness and whether the fibers are gin cut or stringy.

The staple length of cotton means the normal length by measurement, without regard to quality or value, of a typical portion of its fibers under a relative humidity of the atmosphere of 65 per cent and a temperature of 70 degrees Fahrenheit 6/. The staple length is expressed in inches and in fractions of an inch.

5/ Commercial Classification of American Cotton by A. W. Palmer, United States Department of Agriculture Circular No. 278.

6/ S.R.A. Markets No. 41, January 1919, page 4.

By "character" of cotton is meant the strength, "body," uniformity in length, harshness or silkiness, etc., of the fibers. Although the character of cotton is of great importance in determining the spinning quality of the fibers, the factors affecting the character of cotton are not definitely known. Differences in character are recognized in the markets and the prices paid reflect differences in character to some extent; but in the absence of standards for character, no attempt has been made in this study to relate the prices received by growers to the character of cotton in each bale.

METHOD OF PROCEDURE

Fourteen local markets widely distributed over the State and representing as nearly as possible a cross section of the types of local cotton markets in the State were selected for this study. The locations of these markets are shown in Figure 1. Arrangements were made to secure from a ginner located at each of these markets a sample of each bale of cotton ginned at his plant during the season. These samples were mailed to the Memphis office of the United States Department of Agriculture where they were classed according to the Official Cotton Standards for the United States by specialists in cotton classing regularly employed in the Division of Cotton Marketing, Bureau of Agricultural Economics, United States Department of Agriculture.7/ The grade and staple length of the cotton in each sample were recorded.

Data on the price per pound received by the grower, date sold by grower and buyer's classifications, where available, were obtained for each bale from local buyers' books. The type of buyer who bought each bale was also indicated. Cotton sold by farmers in round lots was given a number and was separated from the individual bale sales before the data were tabulated. The official classification of the samples was recorded with the date of sale, price received by grower, and type of buyer. The marketing methods and practices at each market, information relative to the central market and mill town, if any, to which cotton was shipped, and data on handling charges, insurance, storage, and freight rates were obtained for each market for use in interpreting the price data.

The price received by the grower was subtracted from an average of the prices quoted in central markets 8/ for the same quality of cotton on the same day to give a figure representing the spread between the local and central market prices. A weighted average spread for cotton of each grade and staple length marketed each month was calculated. The monthly average spread for 7/8-inch cotton of each grade was subtracted from the

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7/ The local markets studied were selected at points where arrangements had already been made for obtaining samples for the Grade and Staple Estimate Project. The methods of obtaining samples and the classification of these samples at price points were the same as those for other points used in the Grade and Staple Estimate Project. The classifications were based on loose samples taken from the press box at the gin.

8/ For the Middling 7/8-inch price and the grade differences paid in central markets, averages of the quotations for the 10 designated spot markets were used. For staple premiums for 15/16-inch and 1 inch cotton, averages of the quotations for the six spot markets giving quotations for staple premiums were used. For premiums for staples longer than 1-1/32 inches averages of the quotations for Memphis and New Orleans were used. A discount of [illegible] points was made for cotton with a staple length of 13/16-inch and shorter.

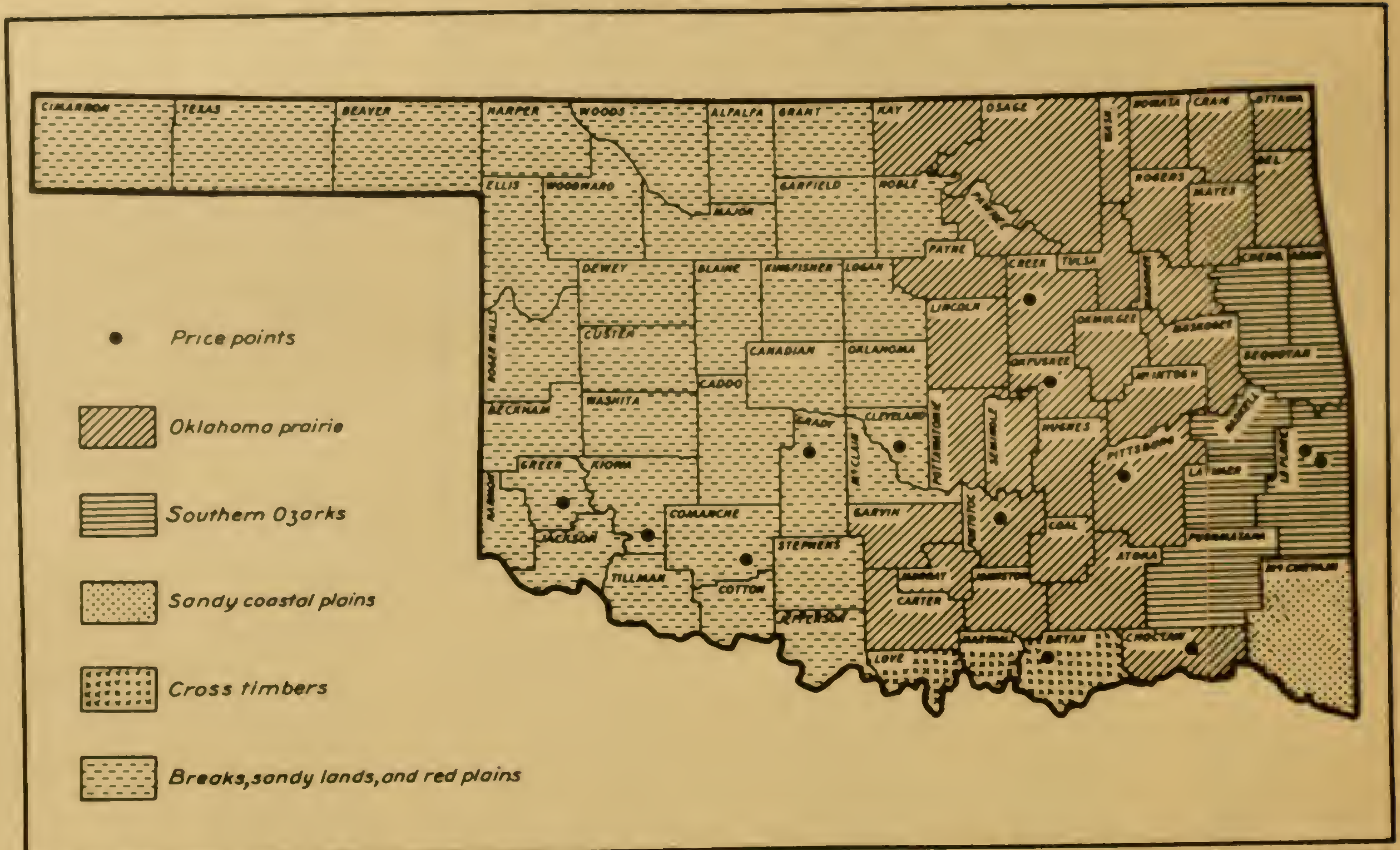

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FIGURE 1 - LOCATION OF PRICE POINTS IN DIFFERENT SOIL AREAS IN OKLAHOMA, SEASON 1928-29

average spread for each other staple length of the same grade, and the average spread for Middling White cotton of each staple length was subtracted from the average spread of each other grade of the same staple length to give an adjusted spread. Adjusting the spread at each market on the basis of Middling 7/8-inch White cotton eliminated from consideration the differences in price level at different markets and made it possible to combine the adjusted spreads for similar qualities of cotton in different markets.

An adjusted average spread for cotton of each grade and staple length in each local market for the season was obtained by taking a weighted average of the monthly adjusted spreads calculated as indicated above. An adjusted average spread for cotton of each grade and staple length for the State was obtained by taking a weighted average of the adjusted spreads in all local markets.

The adjusted spread for the different grades and staple lengths shows the extent to which the grade differences and staple premiums and discounts paid in local markets varied from those paid in central markets. By subtracting these adjusted spreads from the quoted grade differences and staple premiums and discounts paid in central markets, the actual differences for grade, and premiums and discounts for staple received by growers in local markets were obtained.

The relationship of the average prices received by growers to the average quality of the cotton was determined by relating the comparative price level to average grade and staple length of cotton sold in each local market. Variations in comparative price levels were calculated from the average spread between local and central market prices. A wide positive average spread means that the average prices received by growers were low compared with central market prices and a narrow positive spread or a minus spread means that the average prices received by growers were high compared with central market prices. The same average spread for two or more local markets does not mean that the average prices received by growers in those markets were the same, unless the quality of the cotton sold and the date of sale were also the same.

The comparative price levels in local markets vary inversely with the average spread between the local and central market prices. Those local markets which had an average spread less than the average for the group were considered to have relatively high comparative price levels an those which had an average spread greater than the average for the group were considered to have relatively low comparative price levels. By subtracting the average spread for all local markets from that for each local market, and then by dividing the results by a minus 1 the variation in comparative price level in each local market from that of all local markets was obtained. These variations in comparative price level were related to variations in average grade and in average staple length.

High comparative price levels measured as indicated above mean that the average prices received by growers in local markets were high compared with those paid for the same qualities of cotton sold in central markets on the same dates. High comparative price levels in local markets in which the quality of the cotton sold was relatively high mean that the average prices received by growers in these high quality markets were not only absolutely higher than those received in local markets in which cotton of poorer quality was sold, but that they were higher by amounts greater than the differences paid in central markets for the differences in quality.

This comparative price level in a local market is influenced by distance from central market. Adjustments were made for such differences in location by adding to the average prices received by growers in local markets the cost of compressing and of freight to Houston, Texas. This adjustment was made on the assumption that prices in local markets tend to equal central market prices minus carrying charges from the local to the central market. Interest, risks, insurance, and other costs may have varied somewhat, but the differences in these costs were so small that they had little, if any, influence on comparative price levels.

VARIATIONS IN PRICES WITH QUALITY IN THE SAME MARKETS

Irregular Variations

An analysis of the data collected in Oklahoma during the season of 1928-29 shows that prices received by growers for cotton of the same grade and staple length on the same day and in the same markets varied widely. Prices received for cotton of different grades and staple lengths varied so irregularly that it was not unusual to find that prices received by some farmers for higher grade and longer staple cotton were less than those received by other farmers for cotton of lower grade and shorter staple in the same market on the same day. These wide and irregular variations indicate that the grade and staple length of the cotton were at times of less importance in determining prices received by growers than were the bargaining power of farmers or other factors.

To point out more specifically these variations in prices, data on sales made on a selected day during the active part of the season at two representative local markets are presented in Table 2. October 13, 1928, was selected because this date represented an active part of the marketing season in local markets; and because the fluctuations in the New York futures were comparatively narrow. Market A was selected to represent a market in which four buyers of different types competed for street cotton. Market B was selected to represent a one-buyer local market with no local competition.

Prices received by growers on October 13, 1928, for Strict Middling 7/8 inch cotton varied as much as $7.00 per bale in market A and as much as $1.25 per bale in market B. Prices received for Middling 7/8 inch cotton varied from $.10 per bale to $8.85 per bale below those paid for Strict Middling 15/16 inch cotton in market A, and from the same price to $1.25 per bale below those paid for Strict Middling 7/8-inch cotton in market B. (Table 2.)

Table 2. -Variations in prices 1/ paid to growers for cotton in local markets in Oklahoma on October 13, 1928

Classification 2/		Market A			Market B		
Grade	Staple length Inches	Size of sample Bales	Prices paid High Cents	Prices paid Low Cents	Size of sample Bales	Prices paid High Cents	Prices paid Low Cents
3--G.M.	15/16	2	18.70	18.02	1	18.75	18.75
3--G.M.	1	3	19.00	18.02	---	---	---
4--S.M.	13/16 & shorter	2	18.00	17.25	---	---	---
4--S.M.	7/8	4	19.20	17.80	2	18.75	18.50
4--S.M.	15/16	6	19.15	18.02	3	18.75	18.75
4--S.M.	1-1/16 & 1-3/32	1	18.92	18.92	1	18.50	18.50
5--M.	7/8	2	18.00	17.38	4	18.75	18.50
5--M.	15/16	---	---	---	5	18.50	18.25
5--M	1 & 1-1/32	1	19.85	19.85	4	19.00	18.50
5--M.	1-1/16 & 1-3/32	1	20.00	20.00	---	---	---
7--S.L.M.	15/16	1	19.00	19.00	---	---	---

1/ Prices expressed in cents per pound.

2/ White cotton only.

Comparisons were made of prices received by growers for different grades of cotton of the same staple length in the selected local markets on October 13, 1928. The results show that in market A the prices received by growers for Strict Middling varied from $5.65 per bale above to $3.40 per bale below those received for Good Middling and from $.75 per bale above to $4.90 per bale below those received for Strict Low Middling. In market B the prices received for Middling varied from $1.25 per bale to $2.50 per bale below those received for Strict Middling and Good Middling.

Similar comparisons were made of the prices received for cotton of different staple lengths of the same grade. The results show that in market A the prices received by growers for 7/8-inch cotton varied from $1.00 per bale below to $9.75 per bale above those received for cotton with a staple length of 13/16 inch and shorter, from $6.75 per bale below to $5.90 per bale above those received for 15/16 inch cotton, and from $5.60 per bale below to $1.40 per bale above those received for cotton with a staple length of from 1-1/16 to 1-3/32 inches. In market B prices received for 7/8-inch cotton varied from the same price to $1.25 per bale below those received for 15/16-inch cotton, and from the same price to $1.25 per bale above those received for cotton with a staple length of 1-1/16 to 1-3/32 inches.

It is not likely that any of the variations noted above represent the extremes for the season. The date October 13, 1928, represented a time when the volume of sales in the local markets was relatively great, when the range in grade and staple length of the cotton was comparatively narrow, and when fluctuations in the New York futures market amounted to only $1.00 per bale; all of which would tend to prevent the variations from being extreme.

Differences in the character of cotton make one bale worth more than another of the same grade and staple length in a given market on the same day. No measure of character was available for the individual bales sold in local markets and it was not possible to determine to what extent differences in character were responsible for the variations in prices received for different bales. It is believed, however, that variations in the character of cotton sold in a given local market on the same day were not likely to be great enough to account for more than a very small part of the variations noted.

The wide variations in prices received by growers for cotton of the same grade and staple length and the irregular variations in the prices received for cotton of different grades and staple lengths in the same markets on the same day, as pointed out above, were probably the results of a lack of knowledge of the correct classification and commercial values of the different qualities of cotton on the part of farmers and local buyers and to differences in bargaining power of farmers.

Grade Differences

The irregular variations referred to above tend to compensate each other when averaged. Weighted averages of the data on prices collected in local markets in Oklahoma during the season of 1928-29 show that growers actually received for white grades above Middling an average premium of $1.05 per bale for Strict Middling and for Good Middling, and $.95 per bale for Strict Good Middling. The discounts received by growers for white grades below Middling averaged $1.75 per bale for Strict Low Middling ; $4.45 per bale for Low Middling; $8.50 per bale for Strict Good Ordinary; and $12.90 per bale for Good Ordinary. Using Middling white cotton as a basis a weighted average of the prices received by growers for spotted cotton showed an average premium of $1.35 per bale for Good Middling and an average discount of $.45 per bale for Strict Middling, $.85 per bale for Middling, $3.55 per bale for Strict Low Middling, and $6.35 per bale for Low Middling. (Table 3 and fig. 2.)

With the average grade differences received for cotton in local markets determined as indicated above, the next problem was to determine to what extent the grade differences actually received by growers reflected differences in spinning quality. To solve this problem, it was necessary to have a measure of spinning quality. Prices which mills can afford to pay for cotton of different grades and staple lengths depend upon the spinning quality of the cotton. Prices paid in central markets tend to reflect grade differences and staple premiums and discounts paid by mills. Since daily quotations for mill markets giving grade differences and staple premiums and discounts paid for all grades and staple lengths included in this study were not available, an average of the quotations of the grade differences paid in the ten designated spot markets was used as the best available measure of the spinning quality of the different grades of cotton. 9/

9/ Competition in mill markets may be limited to such an extent that prices paid in these markets do not reflect accurately the spinning quality of cotton of different grades and staple lengths. Central market prices may represent a further deflection from a true representation of the differences in spinning quality. Central market prices are used to represent the difference in spinning quality, not because they are considered accurate measures, but because no better measure is available.

Table 3. -Average grade differences 1/ paid for cotton in local markets in Oklahoma and in central markets, and comparison of differences paid in local markets with those paid in central markets, season of 1928-29 2/

Grade	Local markets		Central markets	Variations
	Size of sample	A--Average differences	B--Average differences	A Minus B
	Bales	Dollars	Dollars	Dollars
White 3/				
2--S.G.M.	3	0.95	3.00	-2.05
3--G.M.	401	1.05	1.95	-0.90
4--S.M.	2 705	1.05	1.25	-.20
5--M.	962	0	0	0
6--S.L.M.	304	-1.75	-4.00	2.25
7--L.M.	111	-4.45	-7.90	3.45
8--S.G.O.	79	-8.50	-12.00	3.50
9--G.O.	29	-12.90	-16.20	3.30
Spotted				
3--G.M.	20	1.35	1.10	.25
4--S.M.	202	-.45	-.15	-.30
5--M.	87	-.85	-3.80	2.95
6--S.L.M.	21	-3.55	-7.75	4.20
7--L.M.	24	-6.35	-11.70	5.35

1/ Differences expressed in dollars per bale of 500 pounds gross. Minus (-) means a discount.

2/ Basis Middling white cotton equals zero. The average price paid for Middling 7/8-inch cotton during the season in local markets was 17.92 cents per pound or $89.60 per bale, and in central markets 18.39 cents per pound or $91.95 per bale.

3/ Includes extra white cotton.

A comparison of the grade differences received in local markets in Oklahoma with those paid in central markets shows that the average premiums received by growers for the higher grades of white cotton were about four-fifths of those quoted in central markets and that the higher the grade, the smaller was the proportion of central market premiums actually received by growers. For the white grades below Middling, the average discounts in the local markets amounted to a little more than half of those quoted in central markets, but the lower the grade the greater was the proportion of central market discounts actually reflected in the prices received by growers. The average premium for Good Middling spotted

Table 4 -Average staple premiums and discounts 1/ paid in local markets in Oklahoma and in central markets, and comparison of the average premiums and discounts paid in local markets with those paid in central markets, season of 1928-29 2/

Staple 3/ Inches	Local markets		Central markets	Variations
	Size of sample	A-Av. prems. and discs. per bale	B--Av. prems. and discs. per bale	A Minus B
	Bales	Dollars	Dollars	Dollars
13/16 and shorter	225	-0.45	-2.50	2.05
7/8	1,557	0	0	0
15/16	2,424	0	1.30	-1.30
1 and 1-1/32	918	0	4.00	-4.00
1-1/16 and 1-3/32	96	-0.30	8.05	-8.35
1-1/8 and 1-5/32	25	-1.30	11.10	-12.40
1-3/16 and 1-7/32	6	-1.00	15.20	-16.20
1-1/4 and longer	2	-1.05	26.00	-27.05

1/ Premiums and discounts expressed in dollars per bale of 500 pounds gross. Minus ( ) means a discount.

2/ Basis 7/8-inch cotton equals zero. The average price paid for Middling 7/8 inch cotton during the season in local markets was 17.92 cents per pound or $89.60 per bale, and in central markets 18.39 cents per pound or $91.95 per bale. Minus ( ) means a discount.

3/ All grades of white and spotted cotton included.

cotton was greater in local than in central markets, but the average discount for Strict Middling spotted cotton was also greater in local than in central markets. The proportion of central market discounts reflected in the prices received by growers for the lower grades of spotted cotton amounted to 22.4 per cent for Middling, 45.8 per cent for Strict Low Middling and 54.3 per cent for Low Middling. (Table 3 and fig. 2.)

Staple Premiums and Discounts

Weighted averages of prices received for cotton in the 13 local markets in Oklahoma show that the average discount in the prices received by growers for cotton with a staple length of 13/16 inch and shorter was only $.45 per bale less than that received for 7/8 inch cotton of the same grade. The average prices received by growers for cotton with staple lengths of 15/16 inch and 1 to 1-1/32 inches were the same as those received for 7/8 inch cotton. The average price received by growers for 7/8 inch cotton was actually greater than that received for staple lengths 1-1/16 inches and longer.

AVERAGE GRADE DIFFERENCES IN DOLLARS PER BALE OF 500 POUNDS PAID FOR COTTON IN LOCAL MARKETS IN OKLAHOMA AND IN CENTRAL MARKETS, SEASON 1928-29

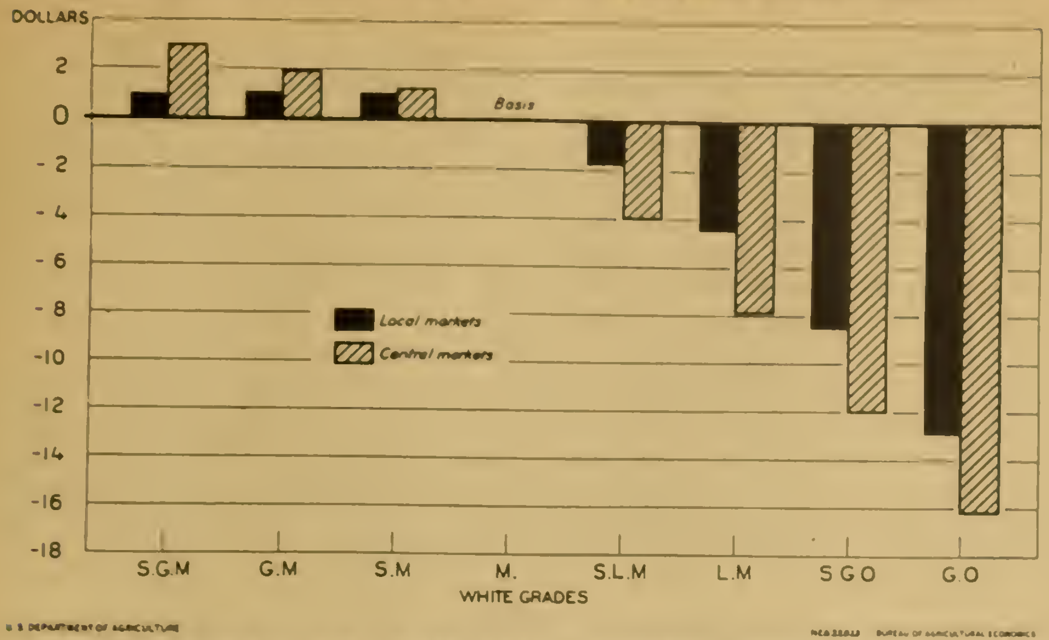


FIGURE 2 - AVERAGE PREMIUMS FOR GRADES ABOVE MIDDLING AND AVERAGE DISCOUNTS FOR GRADES BELOW MIDDLING EXPRESSED IN DOLLARS PER BALE OF 500 POUNDS PAID IN LOCAL MARKETS IN OKLAHOMA AND IN CENTRAL MARKETS, SEASON 1928-29. THE BARS ABOVE ZERO LINE SHOW PREMIUMS AND BARS BELOW ZERO LINE SHOW DISCOUNTS

AVERAGE STAPLE PREMIUMS AND DISCOUNTS IN DOLLARS PER BALE OF 500 POUNDS PAID FOR COTTON IN LOCAL MARKETS IN OKLAHOMA AND IN CENTRAL MARKETS, SEASON 1928-29

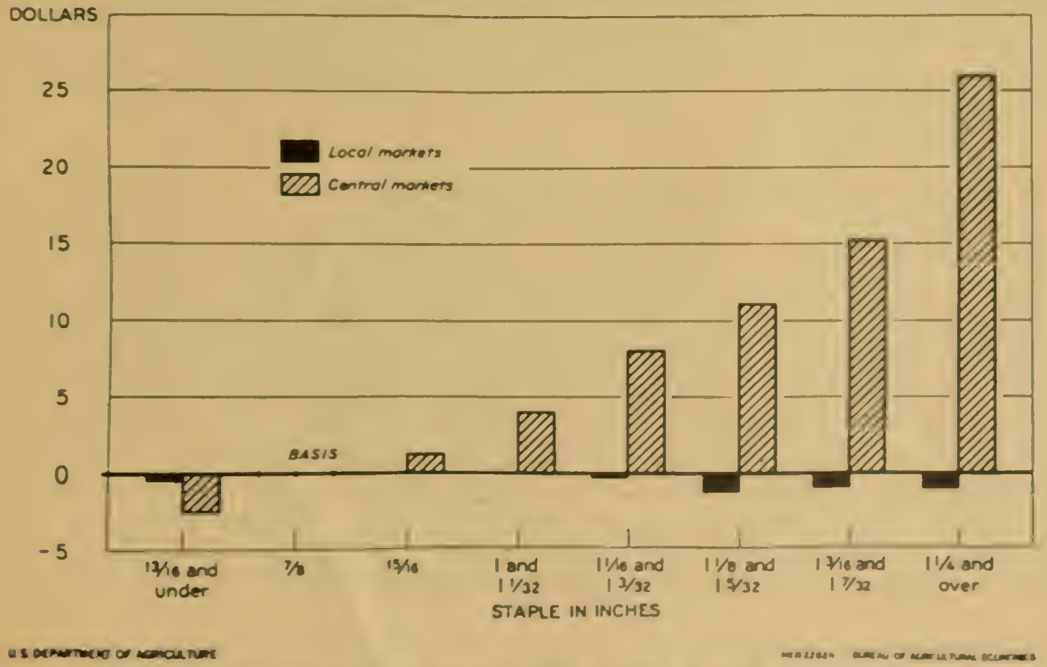


FIGURE 3 - AVERAGE PREMIUMS FOR STAPLE LENGTHS LONGER THAN 7/8-INCH AND AVERAGE DISCOUNTS FOR STAPLE LENGTHS SHORTER THAN 7/8-INCH EXPRESSED IN DOLLARS PER BALE OF 500 POUNDS PAID IN LOCAL MARKETS IN OKLAHOMA AND IN CENTRAL MARKETS, SEASON 1928-29. THE BARS ABOVE ZERO LINE SHOW PREMIUMS AND BARS BELOW ZERO LINE SHOW DISCOUNTS

It should be noted that the average price received by growers for 7/8 inch cotton was as great or greater than that received for any other staple length and that the average price received for staple lengths of 13/16 inch and shorter was almost as great as that received for 7/8 inch. (Table 4 and fig. 3.)

The extent to which the staple premiums and discounts received by growers in local markets in Oklahoma represented differences in spinning quality was indicated by comparing the staple premiums and discounts received by growers with those paid in central markets. Quotations in central markets show variations in 32nds of an inch in staple length, while the classification of the samples used in this study shows variations in 16ths of an inch. The staple premiums paid in central markets for cotton with staple lengths of 1 inch, 1-1/16 inches, 1-1/8 inches, 1-3/16 inches, and 1-1/4 inches were compared with average staple premiums received in local markets for cotton with staple lengths of 1 to 1-1/32 inches, 1-1/16 to 1-3/32 inches, 1-1/8 to 1-5/32 inches, 1-3/16 to 1-7/32, and 1-1/4 inches and longer respectively. It should be noted that the differences between the staple premiums paid in central markets and those received in local markets obtained as indicated above represent minimum differences because the quotations for the shortest staple length in each group were used for central market premiums.

The average staple premiums and discounts received by growers were found to be considerably less than those paid in the central markets. (Table 4 and fig. 3.) Only 18.0 per cent of the discounts paid in the central markets for cotton with a staple length of 13/16 inch and shorter was reflected in local markets in the form of discounts to the producers of these short staples. As stated above the average prices received by growers for cotton with staple lengths of 15/16 inch to 1-1/32 inches were the same as that received for 7/8 inch cotton and that those received for staple lengths of 1-1/16 inches and longer were less than that received for 7/8 inch. In central markets the premiums paid for the longer staple lengths varied from $1.30 per bale for 15/16 inch to $26.00 per bale for 1-1/4 inches.

It is obvious from the above comparisons that the average discount received by growers for cotton with a staple length of 13/16-inch and shorter was insignificant. This fact, coupled with the further fact that no premiums were received by growers for staple lengths longer than 7/8-inch, means that the stimuli in the form of prices received by growers for the production of cotton of different staple lengths were considerably out of line with demand for cotton based on spinning quality as indicated by staple premiums and discounts paid in central markets. Such conditions tend to result in the production of larger proportions of the shorter staples and smaller proportions of the longer staple cotton than would be the case if production were adjusted accurately to consumer demand. This maladjustment of production to demand tends to reduce net returns to growers as a group and to increase costs to consumers.

Several factors may help to explain the failure of farmers to receive grade differences and staple premiums and discounts equal to those paid in central markets. The local buyers with the facilities available, in many cases, were not in position to classify cotton accurately according to Government standards at the time farmers sold their cotton. In addition, many local buyers were not thoroughly familiar with grade differences and staple premiums and discounts paid in central markets. Even if local buyers knew the classification of cotton and were in position to pay central market grade differences and staple premiums and discounts, differences in bargaining power of farmers, partly as a result of their not knowing the classification and commercial value of their cotton, would tend to cause prices received by growers to be out of line with central market prices.

Cotton of the higher grades and longer staple lengths could not always be had in sufficient quantities in local markets to justify local buyers in paying the same grade differences and staple premiums as were paid for similar qualities of cotton sold in even running lots in central markets. Small quantities of lower grade and shorter staple cotton, however, do not explain the failure of local buyers to penalize this cotton to the same extent as it was penalized in central markets.

Risks due to fluctuations in differences paid for grades above Middling and premiums paid for staple lengths longer than 7/8 inch tend to discourage local buyers from paying growers full central market differences and premiums for the higher grades and longer staple lengths. Similar risks for the lower grade and shorter staple cotton would tend to cause, other things being equal, the discounts made by local buyers for the lower grades and the shorter staple lengths to be greater than the discounts made in central markets for cotton of the same grades and staple lengths. The fact that the longer staple lengths cannot be delivered on futures contract at full central market premiums may tend to prevent local buyers from paying to growers full central market premiums for the longer staple cotton.

Lack of adequate information on correct classification and commercial value of the different qualities of cotton on the part of growers and local buyers was probably the most important factor responsible for the practice of paying growers an averaged price for their cotton with relatively little variations in prices paid with the difference in grade and staple length of individual bales.

VARIATIONS IN AVERAGE PRICE WITH AVERAGE QUALITY

In Different Markets

Grade differences and staple premiums and discounts received by growers in local markets as shown above represented the average variations in prices received for other grades from that received for Middling White cotton and for other staple lengths from that received for 7/8-inch cotton in the same markets at the same time. These variations were independent of the average price level and do not indicate whether the average prices received by growers varied with the average grade and staple length.

Although the practice of "point buying" or of paying an averaged price for all cotton offers little inducement to individual farmers to improve the quality of the cotton grown, it may reward production of good quality on a community basis if the average prices received by growers vary with the average quality of the cotton. In order to determine the extent to which production of cotton of good quality was rewarded on a community basis it was necessary to compare the variations in average prices received in local markets with variations in the average quality of cotton sold in these markets.

The average price received by growers for cotton in all local markets studied combined for the season was 17.80 cents per pound while the average price paid in central markets for the same qualities of cotton during the same time was 18.50 cents per pound, giving an average spread of 0.70 cents per pound. As stated above the comparative price levels in local markets vary inversely with the average spread between the local and central market prices. Those local markets which had an average spread less than 0.70 cents per pound had relatively high comparative price levels and those which had an average spread greater than 0.70 cents per pound had relatively low comparative price levels.

Analysis of the data on prices received by growers indicated very little, if any, relationship between variations in average adjusted comparative price level and variations in average grade and staple length of the cotton sold. No relation of comparative price level to average grade and staple length means that farmers who sold cotton in local markets where the average quality was relatively high received on the average correspondingly higher prices than those who sold in local markets where the average quality of the cotton was relatively low. These results indicate a tendency to reward farmers on a community basis for producing the higher grades and longer staple lengths and to penalize growers on a community basis for producing the lower grades and shorter staple lengths by amounts approximately equal to the grade differences and staple premiums and discounts paid in central markets.

As pointed out above, the failure of farmers to receive prices which vary appreciably with quality makes it more profitable to them as individuals to grow the kind of cotton which can be produced at the least cost per pound regardless of grade and staple length. Production of short staple cotton in order to obtain increased yields lowers the price level in local markets to the disadvantage of all cotton growers in the community. Where costs of production are less for the shorter than for longer staple cotton, the failure to vary the prices received by growers with the staple length of individual bales offers a reward to individual farmers for growing the kind of cotton which forces the price level down at the expense of all other cotton growers in the community and in effect penalizes farmers for producing the kind of cotton responsible for the higher price level. So long as farmers operate for individual profits it is not reasonable to expect them to sacrifice individual interests for the interests of the group.

Seasonal Variations

A comparison of average monthly prices received for Middling 7/8-inch White cotton in local markets with those paid for cotton of the same grade and staple length in central markets shows that the average spread was relatively narrow during September and October and widened considerably during November, December, and January. The average prices received by growers varied from $.20 per bale above central market prices in September to $11.10 per bale below central market prices in January. The spread between the prices received by growers for Middling 7/8-inch cotton and New York futures quotations for the current months increased from $2.95 per bale in September to $16.70 per bale in January. (Table 5, fig. 4.)

Table 5. -Average price per pound paid for Middling 7/8-inch white cotton in local markets in Oklahoma and in central markets 1/ and prices of futures in New York 2/ by months, season 1928-29

Month	Local market		Spot prices in central market 1/	Futures in New York
	Sales 3/	Price		
	Bales	Cents	Cents	Cents
August	---	---	18.72	19.01
September	36	17.18	17.76	18.39
October	142	17.86	18.46	19.28
November	31	17.45	18.71	19.76
December	1	17.41	19.08	20.16
January	---	---	18.88	20.00
February	---	---	18.86	19.97

1/ Average of the ten designated spot markets as reported to the United States Department of Agriculture.

2/ Average of the futures quotations for the current month as reported by the New York Cotton Exchange.

3/ Number of bales used in computing the average prices in the next column.

Variations in the average monthly comparative price level from that for the season show that for cotton of all grades and staple lengths the average comparative price level increased from $3.95 per bale below the seasonal average in August, to $1.70 per bale above the seasonal average in October. (Table 6, fig. 5.) From the high point in October, the average comparative price level declined until the low point of $5.70 per bale below the seasonal average was reached in January. After January the comparative price level moved upward and in February was $.15 per bale above the seasonal average.

The variations in comparative price level from month to month appeared not to be very definitely related to variations in average grade and in average staple length of the cotton. (Table 6 and fig. 5.) The comparative price level moved upward from August to October while at the same time the average staple length increased and the average grade became lower. From October to January the comparative price level and average grade declined while the trend in the average staple length was upward. After January the volume of sales was too small for the averages to be significant.

The average adjusted comparative price level in the local markets studied was relatively high in October when the volume of sales by farmers was relatively great. This means that the prices received by growers in October were more nearly equal to those paid in the central markets than at any other time during the season. This relatively high price level may be accounted for in part by the larger volume of sales which made it possible to handle cotton on relatively narrow margins and by competition of buyers, who had sold cotton in advance, for cotton withwhich to fill their commitments.

Table 6 -Variations in comparative price level, 1/ in average grade, 2/ and in average staple length 3/ in local markets in Oklahoma by months from the seasonal average, season of 1928-29

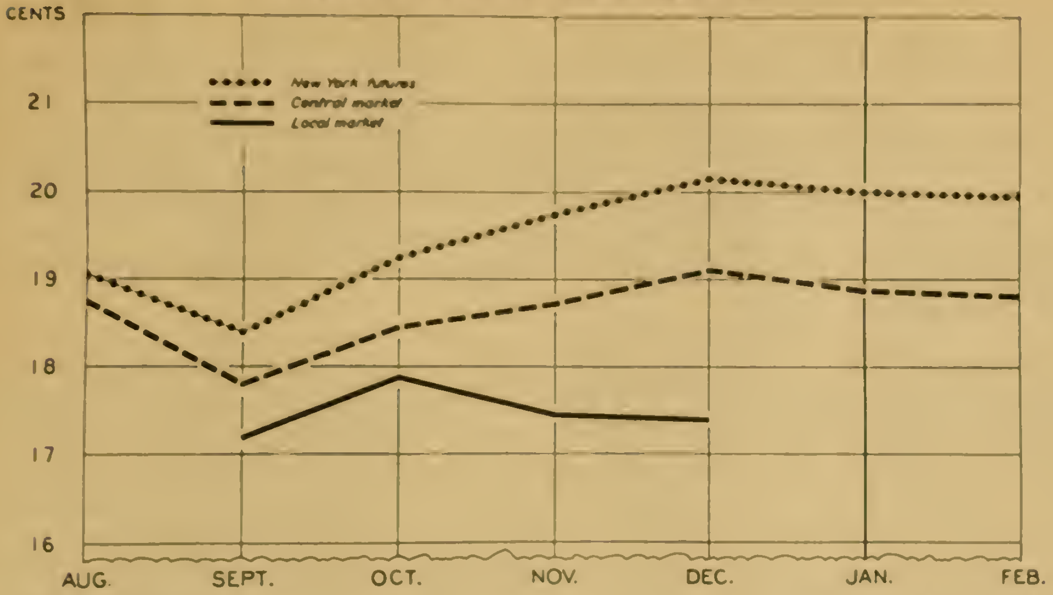
Month	All grades and staples				Middling 7/8 inch	
	Size of sample	Variations in 4/			Size of sample	Variations in 4/ comparative price level 1/
		Comparative 1/ Price level	Average grade 2/	Average staple 3/ length		
	Bales	Cents per pound	Grades	1/16 inch	Bales	
August	18	-0.70	0.22	2.19	---	---
September	2,188	-.08	.60	.08	36	.12
October	2,445	.15	.13	.04	142	.10
November	591	-.35	-1.62	-.19	31	-.56
December	291	-.57	-2.30	-.56	1	-.97
January	8	-.38	-.20	-1.11	---	---
February	3	.60	-.45	-.86	---	---

1/ Prices received by growers were subtracted from those paid in central markets for the same qualities of cotton on the same dates to give an average spread for the season. This average spread was subtracted from the average spread for each month to give monthly variations in spread from the average for the season. The monthly variations in spread were divided by a minus 1 to give variations in comparative price level in local markets. The seasonal average price received by growers for all cotton was 17.80 cents per pound and the average price paid in central markets for the same qualities of cotton sold on the same dates was 18.50 cents per pound giving a spread of .70 cents per pound. The average spread for Middling 7/8-inch cotton was .47 cents per pound.

2/ Average grade was calculated on the basis of equal steps or varistions from one grade to another, beginning with Strict Good Ordinary as 1 up to Middling Fair as 9. Strict Middling Spotted was considered equivalent to Middling White. The average grade for the season was 5.45 or almost midway between Middling and Strict Middling. Monthly variations in grade were obtained by subtracting the average grade for the season from the average grade for each month.

3/ Staple length was calculated in 1/16 of an inch. The average staple length for the season was 14.86 sixteenths of an inch. Monthly variation in staple were obtained by subtracting the average staple for the season from the average staple for each month.

4/ Minus (-) means below seasonal average.



AVERAGE PRICE PER POUND FOR MIDDLING ⅞-INCH WHITE COTTON IN LOCAL MARKETS IN OKLAHOMA, IN CENTRAL MARKETS, AND IN NEW YORK FUTURES MARKET, BY MONTHS, SEASON 1928-29

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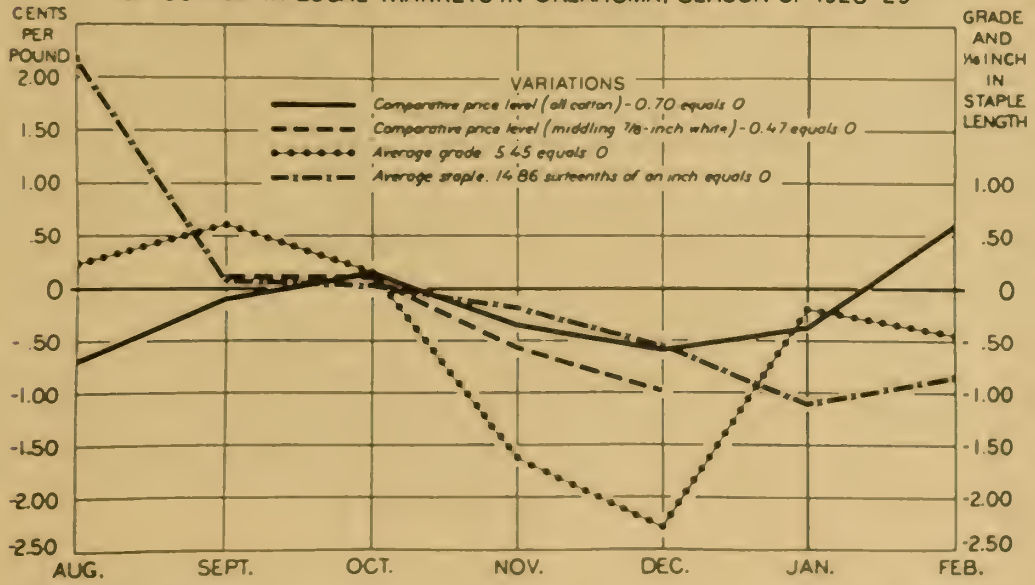
FIGURE 4 - THE SPREAD BETWEEN THE AVERAGE PRICES PAID FOR MIDDLING 7/8-INCH WHITE COTTON IN LOCAL MARKETS IN OKLAHOMA AND THOSE PAID IN CENTRAL MARKETS AND FOR NEW YORK FUTURES WAS RELATIVELY NARROW IN SEPTEMBER AND OCTOBER AND THEN WIDENED CONSIDERABLY IN NOVEMBER AND DECEMBER. THE SPREAD WAS NARROW WHEN THE VOLUME OF SALES IN LOCAL MARKETS WAS GREATEST



AVERAGE MONTHLY VARIATION IN COMPARATIVE PRICE LEVEL FOR ALL COTTON AND FOR MIDDLING ⅞-INCH WHITE COTTON, AND IN AVERAGE GRADE AND STAPLE LENGTH OF COTTON IN LOCAL MARKETS IN OKLAHOMA, SEASON OF 1928-29

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FIGURE 5 - THE AVERAGE MONTHLY VARIATIONS IN COMPARATIVE PRICE LEVEL FOR ALL COTTON SHOW THAT THE PRICES RECEIVED BY GROWERS ON THE AVERAGE WERE MORE NEARLY EQUAL TO CENTRAL MARKET PRICES IN OCTOBER THAN ANY OTHER PART OF THE SEASON EXCEPT IN FEBRUARY WHEN ONLY A FEW SALES WERE SOLD. THE AVERAGE GRADE AND STAPLE LENGTH WAS ABOVE THE AVERAGE DURING THE FIRST PART OF THE SEASON AND TRENDED DOWNWARD THROUGHOUT MOST OF THE SEASON

The prices received by growers for cotton in local markets are the media through which the demand for cotton is expressed to growers, and these prices indicate to farmers who know and follow their best interests, how much and what varieties of cotton they can afford to grow. Relatively high prices received by growers for all cotton tend to result in an increased acreage planted to cotton the following year 10/. Likewise significant premiums received by growers for the longer staple cotton over that received for the shorter staple cotton offers an incentive for growing the longer staple varieties. Where an averaged price is received for all cotton or where no significant differences are made in the prices received by growers for cotton of different grades and staple lengths, farmers are more interested in yields than in quality and they tend to grow the kind of cotton which can be produced at the least cost per pound regardless of grade and staple length.

The grower's apparent indifference to improving the quality of his cotton may be accounted for, in part at least, by the fact that the differences in prices received offer little inducement to the individual farmer to improve the grade and staple length of his cotton. As shown above, some farmers received more for cotton of low grade and short staple than others received for cotton of higher grade and longer staple length in the same local markets on the same days. On the average, however, growers received small premiums for the higher grades and small discounts for the lower grades. These grade differences represent only a small proportion of those paid in central markets. The average price received by growers for cotton with a staple length of 13/16 inch and shorter was a little less than that received for staple lengths of 7/8 inch to 1-1/16 inches, and was actually greater than that received for staple lengths 1-1/8 inches and longer.

Coupled with the failure of growers to receive in local markets significant grade differences and staple premiums and discounts is the belief on the part of some farmers that the shorter staple varieties give higher yields and that the costs of production are less than for the longer staple varieties. Since no premiums on the average are received by growers in local markets for cotton of longer staple lengths over that received in the same markets for cotton of shorter staple length, farmers in some localities are convinced that they can make more money from the production of shorter staple than from the production of the longer staple varieties. The percentage of lint to seed cotton is usually greater for the shorter than for the longer staple varieties and it is possible that growers misjudge the relative yields of the shorter and longer staple varieties because of this difference in percentage of lint. Total yields per acre are more important than a high gin turn-out, but it is far more difficult to compare differences in yield per acre than it is to compare differences in percentage of lint to seed cotton.

The failure of farmers to receive grade differences and staple premiums and discounts equal to those paid in central markets means that the price incentive to growers was deflected out of line with consumer demand. This deflected price incentive to growers tends to result in the production of larger proportions of the shorter staples and smaller pro-

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10/ Factors Affecting the Price of Cotton by Bradford B. Smith, U.S.D.A. Technical Bulletin #50

Table 7. -Average yield, percentage of lint, and comparative value per acre of cotton of different staple lengths grown at Stillwater, Oklahoma 1/

Variety	Staple length in inches	Yield lint per acre	Av. per-centage lint	Price per pound for Middling 2/		Comparative value per acre 3/	
				Local market prems. and discounts	Central market prems. and discounts	Local market prems and discounts	Central market prems.and discounts
		Pounds		Cents	Cents	Dollars	Dollars
Half and Half	13/16	319.4	42.51	17.83	17.42	53.24	51.93
Trice (Burdette)	7/8	286.1	35.19	17.92	17.92	48.44	48.44
Oklahoma 44-11	15/16	339.5	38.94	17.92	18.18	57.12	58.00
Oklahoma 44(OES)	31/32	309.9	37.46	17.92	18.18	52.27	53.08
Acala 5-37	1	298.0	38.51	17.92	18.72	50.18	52.56
Delfos	1-1/16	249.5	34.38	17.86	19.53	42.14	46.31
Lightning - Express	1-3/32	269.4	35.12	17.86	19.53	45.40	49.90

1/ Summary of Cotton Variety Tests, 1925-29. Oklahoma Agricultural Experiment Station, Stillwater, Oklahoma.

2/ The average price received by growers in local markets for Middling 7/8-inch cotton during the season of 1928-29 was taken as a basis. To this basis was applied local and central market staple premiums and discounts. Local market premiums and discounts represent averages of what growers actually received in local markets in the State during the season 1928-29. For central market premiums and discounts averages of the six central markets giving staple quotations were taken as premiums for 15/16 and 1 inch cotton. For staple lengths longer than 1-1/32 inches averages of the premiums paid in New Orleans and Memphis were used. A flat deduction of 50 points was made for cotton with a staple shorter than 7/8 inch.

3/ The comparative value per acre represents the value of the cotton and cotton seed less the cost of picking and ginning. The value of the cotton seed was based on December 1, prices for Oklahoma as reported by the Department of Agriculture. The prevailing rates for ginning and picking in Oklahoma were used in calculating picking and ginning costs.

portion of the longer staple cotton than would be the case if production were adjusted accurately to consumer demand This maladjustment of production to consumer demand makes it impossible for individual growers to realize the full benefits of their relative advantage for producing the higher grade and longer staple cotton. As stated above these results tend to reduce net income to growers as a group and to increase costs to consumers.

As a means of pointing out more specifically the relationship between staple length, yield, and comparative value per acre of cotton grown in Oklahoma, results of cotton variety tests conducted at Stillwater, Oklahoma are shown in Table 7. These data show that at Stillwater, Oklahoma, cotton with a staple length of 15/16 inch ranked first in yield, first in comparative value per acre, and second in percentage of lint. Comparisons with other staple lengths are shown in Table 7.

SUMMARY AND CONCLUSIONS

Farmers are inclined to grow the kind of cotton that, at prices received in local markets, yields them as individuals the greatest net profits. Differences in prices received by growers along with differences in cost of production are the principal incentives for producing cotton of different grades and staple lengths.

Prices received by growers in local markets in Oklahoma varied so irregularly that some farmers received considerably higher prices for the lower grades and shorter staples than other farmers received for the higher grades and longer staples in the same markets on the same days.

The average premiums received by growers for grades above Middling amounted to about four-fifths of those paid in central markets. The average discounts received by growers for grades below Middling amounted to a little over one-half of those paid in central markets.

The average price received by growers for cotton with a staple length of 13/16 inch and shorter was only $.45 per bale less than that received for 7/8 inch cotton; whereas in central markets, cotton with a staple length of 13/16 inch and shorter was discounted $2.50 per bale. No premiums were received by growers for staple lengths longer than 7/8 inch. The average price received by growers for 7/8-inch cotton was as great or greater than that received for any other staple length.

Compared with central market prices, individual farmers in Oklahoma were in effect penalized for producing the higher grades and longer staples and paid a bonus for producing the lower grades and shorter staples. This practice makes it impossible for individual growers to realize the full benefits of their relative advantage for producing cotton of different grades and staple lengths Under such conditions the amount of premiums withheld from farmers who are more favorably situated for producing the higher grades and longer staples is greater than the rewards to farmers who produce the lower grades and shorter staples. The results tend to reduce net returns to growers as a group and to increase costs to consumers.

Average prices received by growers were higher in communities noted for producing the higher grades and longer staples than in communities noted for producing lower grades and shorter staples. Those differences in average prices indicate a tendency to reward growers, on a community basis, for producing the higher grades and longer staples and in effect to penalize growers, on a community basis, for producing cotton of lower grades and shorter staples. The failure to distribute those premiums and discounts on an individual-bale basis offers a reward to individual farmers for producing the kind of cotton that forces the local price level down at the expense of all other cotton growers in the community, and in effect penalizes farmers for producing the kind of cotton responsible for higher price levels.

Average prices received by growers were relatively high in October when the volume of sales in local markets was relatively large. Variations in these average prices from month to month were not very definitely related to variations in average grade and staple length.

Failure of growers to receive prices that reflect accurately the differences in spinning quality of the different grades and staple lengths as shown above results in the production of larger proportions of lower grades and shorter staple lengths and smaller proportions of higher grades and longer staples than would be the case if production were adjusted accurately to consumer demand. The proportion of the different grades and staple lengths of cotton produced in Oklahoma can be brought more nearly in line with spinners' demand and the net returns to growers as a group can be increased (1) by perfecting the marketing system so that the prices received by growers will reflect the differences in spinning quality of the different grades and staple lengths, and then (2) by advising farmers regarding the relative profitableness of producing cotton of different grades and staple lengths in each locality.

In order that farmers may sell their cotton in local markets strictly on a quality basis, under the present marketing system, it would be necessary that both growers and local buyers know the quality and commercial value of the cotton at the time of making the transactions. Since farmers and many local cotton buyers are not able to classify cotton accurately, a means of improvement would be to have some competent and reliable person classify the cotton according to a uniform standard and issue his certificate showing the grade, staple length, and character of each bale before it is sold.

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